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Pre Ph. D. Course work Examination 2019-20

MATHEMATICS

PAPER II: CW – 02 (TOOLS AND TECHNIQUES)

Model question paper

[Set – III]

Duration - 3.00 Hrs **Max. Marks - 80**

Note: Section - A is Compulsory. Answer one question from each unit of Section - 'B' carrying equal marks

Section - A

1. Answer the following questions in brief. **2 X 10 = 20**

(I) what are component of LaTex?
(II) What is LaTex documents?
(III) Write LaTex Structure for 90^0.
(IV) Define extension principle for fuzzy sets.
(V) State first Decomposition theorem for fuzzy sets.
(VI) Give an example of continuous function that is not Lipschitz continuous.
(VII) Define non expansive mapping.
(VIII) Write the necessary and sufficient condition of regularity of transformation T.
(IX) What is almost everywhere summability?
(X) Write formula of Drichlet'sintegral.

Section - B **12 X 5 = 60**

UNIT – I

2. What are advantages and disadvantages of LaTex?

3. How can we install LaTex software in our PC?

UNIT – II

4. (a). For all a,bϵ[0, 1] prove that $i_{min}(a, b) \leq (a, b) \leq min(a, b)$.

(b). Prove that if c is a continuous fuzzy compliment then c has unique equilibrium.

5. State and prove first characterization theorem on fuzzy compliment.

UNIT – III

6. State and prove schauder fixed point theorem.

7. State and prove schauder – Tychnoff theorem.

UNIT – IV

8. Write short notes on following.

(i) $(c, 1)$**sum (ii) Abel sum (iii)** $(E, 1)$**sum (iv)** (N, p_n) **sum**

9. Show that two regular N$\ddot{o}$rlund methods (N, p_n) **and** (N, q_n) **are equivalent if -**

$\sum|k_n| < \infty \Leftrightarrow \sum|l_n| < \infty$

UNIT – V

10. State Riemann Lebesgue theorem and write some important consequences of this theorem.

11. What is summability of series? Describe summability of Fourier series.

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